

RED SEAL

THE INTERPROVINCIAL STANDARDS RED SEAL PROGRAM



National Occupational Analysis

2009

Mobile Crane Operator



Human Resources and
Skills Development Canada

Ressources humaines et
Développement des compétences Canada

Canada

Mobile Crane Operator

2009

Trades and Apprenticeship Division

Workplace Partnerships Directorate

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FOREWORD

The Canadian Council of Directors of Apprenticeship (CCDA) recognizes this National Occupational Analysis as the national standard for the occupation of Mobile Crane Operator.

Background

The first National Conference on Apprenticeship in Trades and Industries, held in Ottawa in 1952, recommended that the federal government be requested to cooperate with provincial and territorial apprenticeship committees and officials in preparing analyses of a number of skilled occupations. To this end, Human Resources and Skills Development Canada sponsors a program, under the guidance of the CCDA, to develop a series of National Occupational Analyses (NOA).

The NOAs have the following objectives:

- to describe and group the tasks performed by skilled workers;
- to identify which tasks are performed in every province and territory;
- to develop instruments for use in the preparation of Interprovincial Red Seal Examinations and curricula for training leading to the certification of skilled workers;
- to facilitate the mobility of apprentices and skilled workers in Canada; and,
- to supply employers, employees, associations, industries, training institutions and governments with analyses of occupations.



ACKNOWLEDGEMENTS

The Canadian Council of Directors of Apprenticeship (CCDA) and Human Resources and Skills Development Canada (HRSDC) wish to express sincere appreciation for the contribution of the many tradespersons, industrial establishments, professional associations, labour organizations, provincial and territorial government departments and agencies, and all others who contributed to this publication.

This analysis was prepared by the Workplace Partnerships Directorate of HRSDC. The coordinating, facilitating and processing of this analysis were undertaken by employees of the National Occupational Analysis (NOA) development team of the Trades and Apprenticeship Division.

TABLE OF CONTENTS

FOREWORD	I
ACKNOWLEDGEMENTS	II
TABLE OF CONTENTS	III
LIST OF PUBLISHED NATIONAL OCCUPATIONAL ANALYSES	V
STRUCTURE OF ANALYSIS	VII
DEVELOPMENT AND VALIDATION OF ANALYSIS	IX

ANALYSIS

SAFETY	3
SCOPE OF THE MOBILE CRANE OPERATOR TRADE	4
OCCUPATIONAL OBSERVATIONS	6
BLOCK A	OCCUPATIONAL SKILLS
Task 1	Uses tools and equipment. 7
Task 2	Organizes work. 10
BLOCK B	HOISTING CALCULATIONS
Task 3	Determines load weights. 12
Task 4	Calculates crane capacity. 13
Task 5	Performs rigging calculations. 14
BLOCK C	CRANE INSPECTION AND MAINTENANCE
Task 6	Performs pre-operational checks and regular inspections. 16
Task 7	Performs continual checks. 21
Task 8	Performs minor crane maintenance. 23
BLOCK D	RIGGING
Task 9	Inspects and maintains slings and hardware. 25
Task 10	Follows rigging procedures. 27

BLOCK E	LIFT PLANNING, SITE PREPARATION AND CRANE SETUP	
Task 11	Performs pre-lift planning.	29
Task 12	Sets up crane.	30
BLOCK F	CRANE ASSEMBLY, DISASSEMBLY AND TRANSPORT	
Task 13	Loads and unloads components for transport.	32
Task 14	Drives cranes on public roadways and jobsites.	33
Task 15	Assembles and disassembles crawler and truck-mounted lattice cranes.	35
Task 16	Assembles and disassembles truck-mounted and all-terrain (AT) hydraulic cranes.	43
Task 17	Assembles and disassembles rough-terrain (RT) cranes.	47
Task 18	Assembles and disassembles specialty equipment and attachments.	50
BLOCK G	CRANE OPERATION	
Task 19	Performs basic craning operations.	52
Task 20	Operates friction drive lattice boom cranes.	54
Task 21	Operates hydraulic drive lattice boom cranes.	55
Task 22	Operates hydraulic boom cranes.	56
Task 23	Performs specialty craning operations.	58
Task 24	Secures crane.	64

APPENDICES

APPENDIX A	TOOLS AND EQUIPMENT	69
APPENDIX B	GLOSSARY	70
APPENDIX C	ACRONYMS	74
APPENDIX D	BLOCK AND TASK WEIGHTING	75
APPENDIX E	PIE CHART	80
APPENDIX F	TASK PROFILE CHART	81

**LIST OF PUBLISHED
NATIONAL OCCUPATIONAL ANALYSES
(Red Seal Trades)**

TITLE	NOC* Code
Agricultural Equipment Technician (2007)	7312
Appliance Service Technician (2005)	7332
Automotive Painter (2009)	7322
Automotive Service Technician (2009)	7321
Baker (2006)	6252
Boilermaker (2008)	7262
Bricklayer (2007)	7281
Cabinetmaker (2007)	7272
Carpenter (2005)	7271
Concrete Finisher (2006)	7282
Construction Craft Worker (2009)	7611
Construction Electrician (2008)	7241
Cook (2008)	6242
Electrical Rewind Mechanic (1999)	7333
Electronics Technician – Consumer Products (1997)	2242
Floorcovering Installer (2005)	7295
Glazier (2008)	7292
Hairstylist (2009)	6271
Heavy Duty Equipment Technician (2004)	7312
Industrial Electrician (2008)	7242
Industrial Mechanic (Millwright) (2007)	7311
Instrumentation and Control Technician (2007)	2243
Insulator (Heat and Frost) (2007)	7293
Ironworker (Generalist) (2006)	7264
Ironworker (Reinforcing) (2006)	7264
Ironworker (Structural/Ornamental) (2006)	7264
Lather (Interior Systems Mechanic) (2007)	7284
Machinist (2005)	7231

* National Occupational Classification

TITLE	NOC* Code
Metal Fabricator (Fitter) (2008)	7263
Mobile Crane Operator (2009)	7371
Motorcycle Mechanic (2006)	7334
Motor Vehicle Body Repairer (Metal and Paint) (2005)	7322
Oil Heat Systems Technician (2006)	7331
Painter and Decorator (2007)	7294
Partsperson (2005)	1472
Plumber (2008)	7251
Powerline Technician (2009)	7244
Recreation Vehicle Service Technician (2006)	7383
Refrigeration and Air Conditioning Mechanic (2009)	7313
Rig Technician (2008)	8232
Roofer (2006)	7291
Sheet Metal Worker (2006)	7261
Sprinkler System Installer (2009)	7252
Steamfitter — Pipefitter (2008)	7252
Tilesetter (2004)	7283
Tool and Die Maker (2005)	7232
Transport Trailer Technician (2008)	7321
Truck and Transport Mechanic (2007)	7321
Welder (2009)	7265

Requests for printed copies of National Occupational Analyses may be forwarded to:

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Human Resources and Skills Development Canada
140 Promenade du Portage, Phase IV, 5th Floor
Gatineau, Quebec K1A 0J9

These publications can be ordered or downloaded online at: www.red-seal.ca. Links to Essential Skills Profiles for some of these trades are also available on this website.

STRUCTURE OF ANALYSIS

To facilitate understanding of the nature of the occupation, the work performed is divided into the following categories:

Block	the largest division within the analysis which reflects a distinct set of operations relevant to the occupation
Task	the distinct activity that, combined with others, makes up the logical and necessary steps the worker is required to perform in a block
Sub-task	the smallest division of work activities that, combined together, fully describe all duties of a task
Supporting Knowledge and Abilities	the elements of skill and knowledge that an individual must acquire to adequately perform a sub-task

Information on the following areas of this occupation is also provided throughout the analysis:

Context	statements written to clarify the intent and meaning of tasks
Trends	any shifts or changes in technology that affect the block
Related Components	all components related to a specified task being undertaken
Tools and Equipment	types of tools and equipment necessary to perform the work on all given tasks identified within the block. More detailed lists of these types are shown in Appendix A

The appendices located at the end of the analysis are described as follows:

Appendix A — Tools and Equipment	a non-exhaustive list of tools and equipment used by a journey person throughout this trade
Appendix B — Glossary	definitions or explanations for terms referred to in this analysis
Appendix C — Acronyms	a list of acronyms used in this analysis with their full name
Appendix D — Block and Task Weighting	the block and task percentages as submitted by each jurisdiction at the validation stage and the national averages of these percentages
Appendix E — Pie Chart	a graph which depicts the national percentages assigned to blocks
Appendix F — Task Profile Chart	a chart which outlines graphically the blocks, tasks, and sub-tasks of this analysis

DEVELOPMENT AND VALIDATION OF ANALYSIS

Development of Analysis

A draft analysis is developed by a committee of industry experts in the field led by a team of facilitators from Human Resources and Skills Development Canada. This draft analysis breaks down all the tasks performed in the occupation and describes the knowledge and abilities required for a tradesperson to demonstrate competence in the trade.

Draft Review

The National Occupational Analysis (NOA) development team then forwards a copy of the analysis and its translation to provincial and territorial authorities for a review of its content and structure. Their recommendations are assessed and incorporated into the analysis.

Validation and Weighting

The analysis is sent to all provinces and territories for validation and weighting. Participating jurisdictions consult with industry to validate and weight the document, examining the blocks, tasks and sub-tasks of the analysis as follows:

- | | |
|------------------|--|
| BLOCKS | Each jurisdiction assigns a percentage of questions to each block for an examination that would cover the entire trade. |
| TASKS | Each jurisdiction assigns a percentage of exam questions to each task within a block. |
| SUB-TASKS | Each jurisdiction indicates, with a YES or NO, whether or not each sub-task is performed by skilled workers within the occupation in its jurisdiction. |

The results of this exercise are submitted to the NOA development team who then analyzes the data and incorporates it into the document. The NOA provides the individual jurisdictional validation results as well as the national averages of all responses. The national averages for block and task weighting guide the Interprovincial Red Seal Examination plan for the trade.

This method for the validation of the NOA also identifies common core sub-tasks across Canada for the occupation. If at least 70% of the responding jurisdictions perform a sub-task, it shall be considered common core. Interprovincial Red Seal Examinations are based on the common core sub-tasks identified through this validation process.

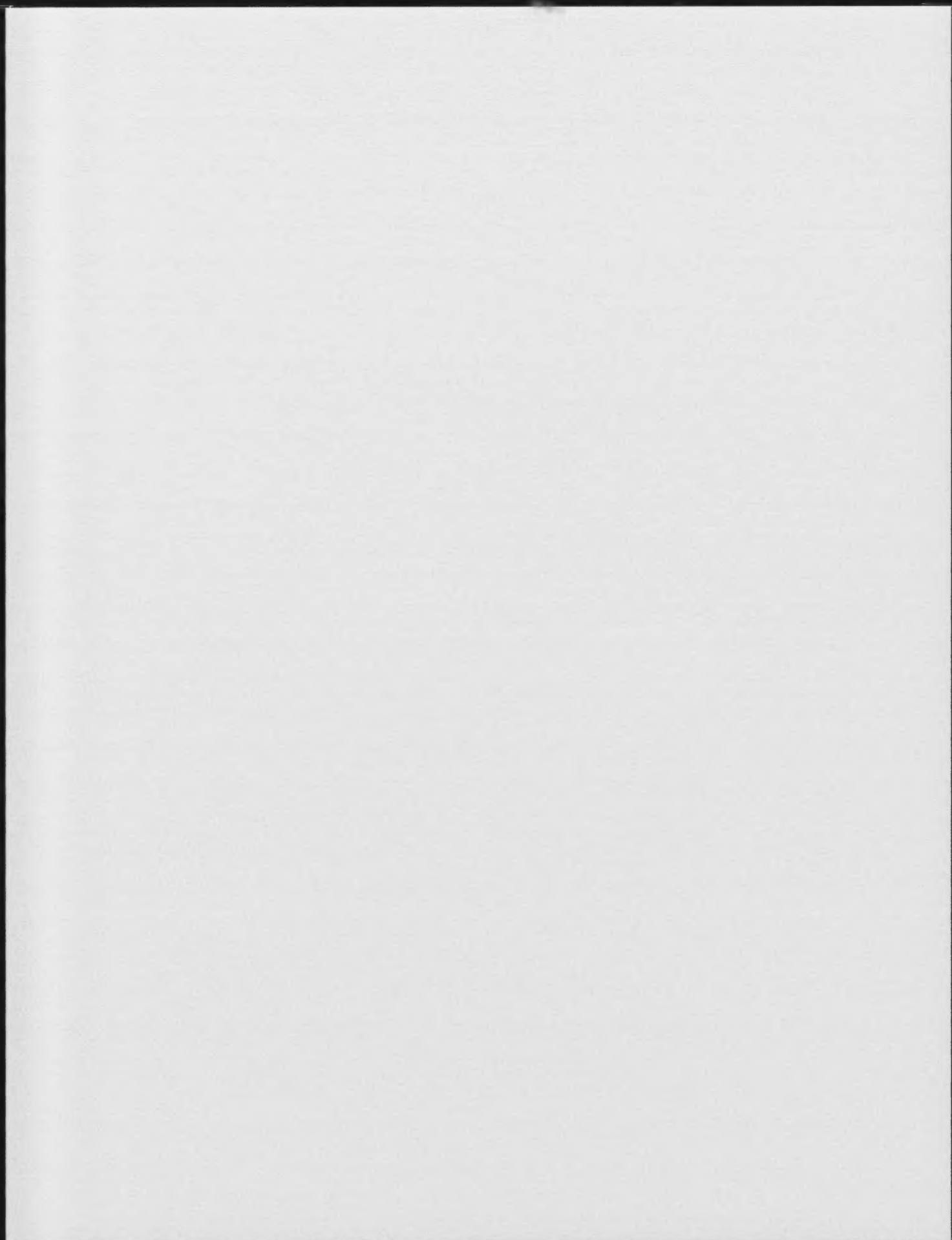
Definitions for Validation and Weighting

YES	sub-task performed by qualified workers in the occupation in a specific jurisdiction
NO	sub-task not performed by qualified workers in the occupation in a specific jurisdiction
NV	analysis <u>N</u> ot <u>V</u> alidated by a province/territory
ND	trade <u>N</u> ot <u>D</u> esignated in a province/territory
NOT COMMON CORE (NCC)	sub-task, task or block performed by less than 70% of responding jurisdictions; these will not be tested by the Interprovincial Red Seal Examination for the trade
NATIONAL AVERAGES %	average percentage of questions assigned to each block and task in Interprovincial Red Seal Examination for the trade

Provincial/Territorial Abbreviations

NL	Newfoundland and Labrador
NS	Nova Scotia
PE	Prince Edward Island
NB	New Brunswick
QC	Quebec
ON	Ontario
MB	Manitoba
SK	Saskatchewan
AB	Alberta
BC	British Columbia
NT	Northwest Territories
YT	Yukon Territory
NU	Nunavut

ANALYSIS



SAFETY

Safe working procedures and conditions, accident prevention, and the preservation of health are of primary importance to industry in Canada. These responsibilities are shared and require the joint efforts of government, employers and employees. It is imperative that all parties become aware of circumstances that may lead to injury or harm. Safe learning experiences and work environments can be created by controlling the variables and behaviours that may contribute to accidents or injury.

It is generally recognized that safety-conscious attitudes and work practices contribute to a healthy, safe and accident-free work environment.

It is imperative to apply and be familiar with the Occupational Health and Safety (OH&S) Acts and Workplace Hazardous Materials Information System (WHMIS) Regulations. As well, it is essential to determine workplace hazards and take measures to protect oneself, co-workers, the public and the environment.

Safety education is an integral part of training in all jurisdictions. As safety is an imperative part of all trades, it is assumed and therefore it is not included as a qualifier of any activities. However, the technical safety tasks and sub-tasks specific to the trade are included in this analysis.

SCOPE OF THE MOBILE CRANE OPERATOR TRADE

"Mobile Crane Operator" is this trade's official Red Seal occupational title approved by the Canadian Council of Directors of Apprenticeship (CCDA). This analysis covers tasks performed by Mobile Crane Operators whose occupational title has been identified by some provinces and territories of Canada under the following names:

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
Crane and Hoist Operator								✓					
Crane And Hoisting Equipment Operator - Branch 1: Mobile Crane Operator							✓						
Crane And Hoisting Equipment Operator - Mobile Crane									✓				
Crane And Hoisting Equipment Operator - Mobile Crane Operator											✓		
Crane Operator					✓								
Mobile Crane Operator	✓	✓	✓	✓									
Mobile Crane Operator (Lattice Boom Friction Crane)										✓			
Mobile Crane Operator - Branch 1 (Over 8 Tons)						✓							

Mobile crane operators operate mobile cranes to lift, move, position and place materials and equipment. They perform pre-operational inspections. They calculate crane capacities and determine load weight, set up and dismantle cranes and position and stabilize the crane before the lift. They may also participate in rigging procedures. They also perform some routine maintenance and housekeeping of the crane equipment such as lubricating and cleaning.

Mobile cranes are used in many industry sectors. They are very commonly used in the construction of buildings and the assembly of large equipment. They are used on construction sites, warehouses, factories, mines, oil rigs, refineries, railway yards, ships and ports. Mobile crane operators may be employed by rental companies, construction firms, manufacturers, public utilities, transport sector companies, ship builders, cargo-handlers, airports, railways and mines.

Cranes come in different types such as crawlers, truck-mounted, rough-terrain and all-terrain. The boom of the crane may be lattice or hydraulic. Some cranes are fitted with equipment that can perform specialized functions including piledriver, clamshell, dragline, wrecking ball, magnet, heavy lift attachments, tower attachments and luffing jibs.

Some mobile crane operators specialize in different crane functions. In some cases, an operator may work for years on a single large site, operating a single type and size of crane. Operators working for rental companies may rarely work on the same site more than once and may routinely perform a variety of tasks with different types and sizes of cranes.

The majority of the work in this trade is outdoors. Key attributes for people entering the trade are strong communication skills, mechanical aptitude, mathematical ability, excellent visual and depth perception and a high degree of hand-foot-eye coordination. The operation of some cranes is physically demanding as is the handling of accessories.

Mobile crane operators interact with other tradespeople, contractors and customers.

The skills of mobile crane operators are transferable to operating other heavy equipment. With experience, operators may move into careers such as business owners, supervisors, trainers and job coordinators.

OCCUPATIONAL OBSERVATIONS

Safety is the number one concern of crane operators, owners and contractors. Mobile crane operators are required to take site-specific safety training to be familiar with the company, contractor and jobsite safety requirements. The regulatory environment in which Canada's crane industry operates continues to grow more complex and more rigorous, covering issues such as due diligence and liability.

As cranes are becoming more sophisticated, the need for training is increasing. There is new knowledge in computer technology, metallurgy and other disciplines associated with the engineering of crane equipment.

Due to technological advances in operator aids such as load moment indicators (LMI), crane operators are more aware of their crane operation limitations.

BLOCK A

OCCUPATIONAL SKILLS

Context	The proper use of tools enables mobile crane operators to work safely and complete tasks as required. Communication in this trade is vital so that all personnel involved in the lift are aware of what is happening.
Trends	There is more emphasis and enforcement of the use of personal protective equipment (PPE) and safety equipment. There is an increase in the use of engineered drawings. Radio communication is being used more frequently in lifts. Mobile crane operators are increasingly using electronic equipment such as personal digital assistants (PDAs) to communicate and input information.
Related Components (including, but not limited to)	All components apply.
Tools and Equipment	See Appendix A.

Task 1 Uses tools and equipment.

Sub-task

A-1.01 Uses hand tools.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

A-1.01.01	knowledge of types of hand tools
A-1.01.02	knowledge of hand tool operating procedures
A-1.01.03	ability to select hand tools according to task
A-1.01.04	ability to recognize worn, damaged and defective hand tools

Sub-task**A-1.02 Uses power tools.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

A-1.02.01	knowledge of types of power tools
A-1.02.02	knowledge of power tool operating procedures
A-1.02.03	ability to select power tools according to task
A-1.02.04	ability to locate power source such as generator and outlets
A-1.02.05	ability to recognize worn, damaged and defective power tools

Sub-task**A-1.03 Uses torches.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

A-1.03.01	knowledge of types of torches such as oxy-acetylene and propane
A-1.03.02	knowledge of fittings on tanks, gauges and torches
A-1.03.03	knowledge of torch operating procedures
A-1.03.04	ability to read setting pressure
A-1.03.05	ability to cut
A-1.03.06	ability to braze
A-1.03.07	ability to heat
A-1.03.08	ability to select torches according to task
A-1.03.09	ability to recognize worn, damaged and defective torch equipment

Sub-task**A-1.04 Uses measuring equipment.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

A-1.04.01	knowledge of measuring equipment such as measuring tape, micrometers and vernier calipers
A-1.04.02	knowledge of anemometer
A-1.04.03	ability to convert between imperial and metric measurements
A-1.04.04	ability to interpret measurements
A-1.04.05	ability to select measuring equipment according to task
A-1.04.06	ability to recognize worn, damaged and defective measuring equipment

Sub-task**A-1.05 Uses personal protective equipment (PPE) and safety equipment.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

A-1.05.01	knowledge of types of PPE such as fire-retardant coveralls, safety boots, hard hats, safety glasses, hearing protection, fall arrest harnesses and survival suits
A-1.05.02	knowledge of types of safety equipment such as first aid kit, fire extinguisher and spill kits
A-1.05.03	ability to select PPE and safety equipment according to task
A-1.05.04	ability to recognize worn, damaged and defective PPE and safety equipment

Task 2**Organizes work.****Sub-task****A-2.01 Communicates with others.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

A-2.01.01	knowledge of hand signals
A-2.01.02	knowledge of radio communication
A-2.01.03	ability to communicate verbally
A-2.01.04	ability to communicate with crew, signaller and rigger
A-2.01.05	ability to communicate with customers
A-2.01.06	ability to consult with engineers
A-2.01.07	ability to coach apprentices

Sub-task**A-2.02 Uses documentation.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

A-2.02.01	knowledge of types of documentation such as manufacturers' specifications, operator manual, permits, charts, bills of lading, log books and pre-trip books
A-2.02.02	knowledge of jurisdictional legislation and regulations
A-2.02.03	knowledge of the Canadian Standards Association (CSA) Z150 standards
A-2.02.04	knowledge of crane operators' legal responsibilities
A-2.02.05	knowledge of site-specific documentation
A-2.02.06	ability to interpret engineered drawings
A-2.02.07	ability to interpret safety documentation such as Workplace Hazardous Materials Information System (WHMIS) and Power Line Hazards (PLH)

Sub-task**A-2.03 Identifies hazards.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

- | | |
|-----------|--|
| A-2.03.01 | knowledge of occupational hazards such as chemical, high tension wires and weather |
| A-2.03.02 | knowledge of environmental hazards such as oil spills and disposal of hazardous materials |
| A-2.03.03 | knowledge of limits of approach to power lines |
| A-2.03.04 | knowledge of WHMIS |
| A-2.03.05 | ability to recognize potential hazards such as oil spills on deck, guy wires and loose bolts |

BLOCK B

HOISTING CALCULATIONS

Context	The ability to accurately calculate crane and rigging capacity for any given load is vital to the safe operation of mobile cranes.
Trends	Employers and contractors are placing more emphasis on the accurate interpretation of load charts.
Related Components (including, but not limited to)	All components apply.
Tools and Equipment	Load charts, measuring equipment, calculator.

Task 3

Determines load weights.

Sub-task

B-3.01 Identifies the weight.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

B-3.01.01	knowledge of sources of load weight information such as bills of lading, stamped weights, engineered drawings and previous lift history
B-3.01.02	ability to verify units of measurement (metric versus imperial)
B-3.01.03	ability to confirm that no modifications have been made that affect the weight

Sub-task**B-3.02 Calculates weight.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

B-3.02.01	knowledge of formulas for conversion between imperial and metric systems
B-3.02.02	knowledge of basic geometry
B-3.02.03	knowledge of factors contributing to load weight such as ice, snow, crating and shifting liquids
B-3.02.04	ability to perform basic mathematical calculations such as volume times density for weights of objects
B-3.02.05	ability to adapt load-weight calculation to reflect the impact of dynamic forces and changing conditions such as precipitation

Task 4**Calculates crane capacity.**

Sub-task**B-4.01 Determines radius and crane configuration.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

B-4.01.01	knowledge of manufacturers' specifications
B-4.01.02	knowledge of jurisdictional safety regulations
B-4.01.03	knowledge of methods of measuring radius such as dry run
B-4.01.04	knowledge of line pull and working load limit (WLL)
B-4.01.05	knowledge of boom deflection
B-4.01.06	ability to define working radius
B-4.01.07	ability to identify crane components affecting crane capacity such as line pull, counterweight, configuration, auxiliary lifting devices and parts of line

Sub-task**B-4.02 Interprets load charts.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

B-4.02.01	knowledge of the radius, boom length, angle and gross capacity
B-4.02.02	knowledge of range diagrams
B-4.02.03	ability to interpret manufacturers' specifications
B-4.02.04	ability to calculate gross load and net capacity

Task 5 Performs rigging calculations.

Sub-task**B-5.01 Performs sling angle calculations.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

B-5.01.01	knowledge of sling and hardware capacity
B-5.01.02	knowledge of sling angle/sling tension tables
B-5.01.03	knowledge of effect of sling angle on sling capacity
B-5.01.04	knowledge of lift data such as available rigging, load size, weight and centre of gravity
B-5.01.05	ability to perform mathematical calculations to determine sling angle/sling tension
B-5.01.06	ability to determine tension on rigging hardware such as hooks and shackles

Sub-task**B-5.02 Performs working load limit (WLL) calculations.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

B-5.02.01	knowledge of size and type of sling
B-5.02.02	knowledge of sling configurations such as choke, basket, vertical and bridle
B-5.02.03	knowledge of size and type of hardware such as shackles, lifting eyes and beams
B-5.02.04	ability to interpret engineers' and manufacturers' specifications

BLOCK C

CRANE INSPECTION AND MAINTENANCE

Context	Safety is the primary reason for thorough inspection and maintenance. Minor maintenance may be done by mobile crane operators but repairs must be performed by qualified technicians. Regular inspections and maintenance keep the crane in good working order.
Trends	More standardized maintenance is being monitored by computers. It is more common to have regular inspections/certifications of cranes. Some new cranes have features such as self-greasers eliminating manual greasing of many moving parts. There is more oil sample testing to prevent premature excessive wear and component failure. Continued emphasis on manually maintaining older cranes is still required as many are still in operation.
Related Components (including, but not limited to)	All components apply.
Tools and Equipment	See Appendix A.

Task 6	Performs pre-operational checks and regular inspections.
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Sub-task

C-6.01 Inspects engine systems.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

C-6.01.01	knowledge of engine system components
C-6.01.02	ability to identify damage to engine system such as leaks, cracks, and worn belts and hoses

- C-6.01.03 ability to check engine fluids such as fuel, oil and coolant
 C-6.01.04 ability to report suspected problems and deficiencies

Sub-task

C-6.02 Inspects air systems.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

- C-6.02.01 knowledge of air system components such as air lines, compressors, belts, dryer system and air tanks
 C-6.02.02 ability to identify air system failures such as air leaks, blockages and frozen lines
 C-6.02.03 ability to check brake system
 C-6.02.04 ability to report air system failures

Sub-task

C-6.03 Inspects electrical systems.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

- C-6.03.01 knowledge of electrical system components such as charging system, lights, signals, alternator, starter, belts, batteries and gauges
 C-6.03.02 ability to recognize electrical system failures
 C-6.03.03 ability to report electrical system failures

Sub-task**C-6.04 Inspects hydraulic systems.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
<u>yes</u>	<u>yes</u>	<u>NV</u>	<u>NV</u>	<u>yes</u>	<u>yes</u>	<u>NV</u>	<u>yes</u>	<u>yes</u>	<u>yes</u>	<u>NV</u>	<u>ND</u>	<u>NV</u>

Supporting Knowledge and Abilities

C-6.04.01	knowledge of hydraulic system components such as hoses, pumps, motors, filters and tanks
C-6.04.02	knowledge of types of hydraulic oil
C-6.04.03	ability to check sight gauge
C-6.04.04	ability to check for leaks
C-6.04.05	ability to extract hydraulic oil for testing
C-6.04.06	ability to report hydraulic system failures

Sub-task**C-6.05 Inspects chassis/car body and running gear components.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
<u>yes</u>	<u>yes</u>	<u>NV</u>	<u>NV</u>	<u>yes</u>	<u>yes</u>	<u>NV</u>	<u>yes</u>	<u>yes</u>	<u>yes</u>	<u>NV</u>	<u>ND</u>	<u>NV</u>

Supporting Knowledge and Abilities

C-6.05.01	knowledge of chassis/car body and running gear components such as steering, braking mechanisms, suspension, drive train, tracks and wheels
C-6.05.02	ability to check tire pressure
C-6.05.03	ability to identify track damage such as cracked pads, broken pins, and worn chains, sprockets and idlers
C-6.05.04	ability to identify chassis and drive train damage such as loose universal joints, leaks in rear end seal and broken fittings
C-6.05.05	ability to identify braking problems
C-6.05.06	ability to identify steering system damage
C-6.05.07	ability to report chassis/car body and running gear damage

Sub-task**C-6.06 Inspects outriggers and counterweights.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

C-6.06.01	knowledge of outrigger components such as beams, jacks and jack pads
C-6.06.02	knowledge of types of counterweights such as fixed, stackable, removable and bumper
C-6.06.03	ability to check for damage to counterweights and lifting lugs
C-6.06.04	ability to verify position and security of counterweights
C-6.06.05	ability to check for damage to outrigger beams, jacks and pads
C-6.06.06	ability to report outrigger and counterweight damage

Sub-task**C-6.07 Inspects boom components and attachments.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

C-6.07.01	knowledge of booms such as lattice and telescopic
C-6.07.02	knowledge of boom attachments such as luffers, jibs, swing-away jib extensions and auxiliary sheaves
C-6.07.03	knowledge of boom components such as head section, butt section, pendant lines and bars, wear pads, telescopic cables and chain systems
C-6.07.04	knowledge of jurisdictional requirements for non-destructive testing
C-6.07.05	knowledge of power pin and dead section
C-6.07.06	ability to check components and attachments for cracks, bent lacing, bent main chords, damaged pendant lines and bars, and worn wear pads
C-6.07.07	ability to report boom component and attachment damage

Sub-task**C-6.08 Inspects hoisting systems.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

- | | |
|-----------|--|
| C-6.08.01 | knowledge of hoisting system components such as clutches, brakes, pumps, hook blocks, overhaul ball, sockets, wedges, clamps and sheaves |
| C-6.08.02 | knowledge of types of wire rope such as rotation resistant, regular right lay and regular left lay |
| C-6.08.03 | knowledge of manufacturers' specifications |
| C-6.08.04 | ability to identify deformities such as bird caging, broken wires, damaged core and crushing |
| C-6.08.05 | ability to check position of wire rope clip |
| C-6.08.06 | ability to report hoisting system damage |

Sub-task**C-6.09 Inspects operating controls.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

- | | |
|-----------|---|
| C-6.09.01 | knowledge of operating controls such as levers, joysticks, foot brakes, master clutch, swing brake, positive swing lock and boom pawl |
| C-6.09.02 | ability to check function of operating controls |
| C-6.09.03 | ability to report operating control problems |

Sub-task**C-6.10 Inspects monitoring and warning systems.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

C-6.10.01	knowledge of load moment indicator (LMI) and load-monitoring devices
C-6.10.02	knowledge of anti-two block system
C-6.10.03	knowledge of range limiting devices
C-6.10.04	ability to test anti-two block system
C-6.10.05	ability to verify LMI accuracy
C-6.10.06	ability to check back-up alarm
C-6.10.07	ability to report monitoring and warning system failures

Task 7**Performs continual checks.**

Sub-task**C-7.01 Monitors site conditions.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

C-7.01.01	knowledge of weather conditions such as wind, lightning and temperature
C-7.01.02	knowledge of ground conditions such as soil compaction and grade
C-7.01.03	knowledge of water conditions such as tides, waves and currents
C-7.01.04	knowledge of location of underground utilities
C-7.01.05	ability to determine need for mats and blocks
C-7.01.06	ability to determine need to adjust outriggers
C-7.01.07	ability to determine changing site conditions such as aerial obstructions, other equipment and personnel on site

Sub-task**C-7.02 Monitors running lines, hoist lines and standing ropes.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

C-7.02.01	knowledge of manufacturers' specifications
C-7.02.02	knowledge of hoist lines, boom-hoist lines and luffing jibs
C-7.02.03	ability to check spooling on drum
C-7.02.04	ability to monitor drum rotation speed
C-7.02.05	ability to monitor operational performance of running lines, boom-hoist drum, stationary pennants and standing ropes
C-7.02.06	ability to identify drum hoist line defects such as kinking, fraying and twisting

Sub-task**C-7.03 Monitors gauges and warning systems.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

C-7.03.01	knowledge of LMI and load scale
C-7.03.02	knowledge of anti-two block system
C-7.03.03	ability to interpret gauges and warning systems

Task 8**Performs minor crane maintenance.****Sub-task****C-8.01 Changes oil and filter.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

C-8.01.01	knowledge of location of filters, drain plugs, filler caps and shut-off
C-8.01.02	knowledge of types of oils and viscosities
C-8.01.03	knowledge of spill kit
C-8.01.04	knowledge of disposal requirements
C-8.01.05	knowledge of filter types
C-8.01.06	ability to identify gas and diesel engines
C-8.01.07	ability to take oil samples for testing

Sub-task**C-8.02 Greases crane.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

C-8.02.01	knowledge of locations of grease fittings from manufacturers' specifications
C-8.02.02	knowledge of types of grease
C-8.02.03	ability to follow maintenance schedule
C-8.02.04	ability to use grease guns

Sub-task**C-8.03 Lubricates wire ropes.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

C-8.03.01	knowledge of manufacturers' specifications
C-8.03.02	knowledge of types of lubricants such as wire rope dressing
C-8.03.03	ability to recognize need for lubrication

Sub-task**C-8.04 Makes minor adjustments and replacements.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

C-8.04.01	knowledge of normal crane operation
C-8.04.02	knowledge of company policies and procedures
C-8.04.03	ability to adjust hoist brake and frictions
C-8.04.04	ability to drain air tanks
C-8.04.05	ability to change hoses
C-8.04.06	ability to replace electrical components such as bulbs and fuses
C-8.04.07	ability to select maintenance products according to operational conditions

BLOCK D

RIGGING

Context	Mobile crane operators are involved in rigging to ensure that it is done safely and properly. While mobile crane operators may not be doing the rigging, they must possess knowledge of rigging procedures. Mobile crane operators have the final say and responsibility for any lift done by their crane.
Trends	New materials such as synthetics are being used in rigging.
Related Components (including, but not limited to)	All components apply.
Tools and Equipment	See Appendix A.

Task 9

Inspects and maintains slings and hardware.

Sub-task

D-9.01 Lubricates slings and hardware.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

D-9.01.01	knowledge of types of lubricants such as wire rope dressing and aerosol sprays
D-9.01.02	knowledge of types of slings such as steel and synthetic

Sub-task**D-9.02 Identifies deformities in slings and hardware.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

D-9.02.01	knowledge of potential deformities in steel slings and hardware such as kinks, broken wires, damaged threads and misshapen components
D-9.02.02	knowledge of potential damage to synthetic slings and hardware such as frays, cuts and stretching
D-9.02.03	ability to report deformities and damages

Sub-task**D-9.03 Disposes of damaged slings and hardware.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

D-9.03.01	knowledge of disposal procedures
D-9.03.02	knowledge of company policies
D-9.03.03	ability to tag damaged slings and hardware before to disposal
D-9.03.04	ability to cut damaged slings and hardware to prevent further use
D-9.03.05	ability to report disposal

Task 10**Follows rigging procedures.****Sub-task****D-10.01 Selects required rigging.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

D-10.01.01	knowledge of working load limit (WLL)
D-10.01.02	knowledge of types of rigging and their applications
D-10.01.03	knowledge of characteristics of load such as weight, centre of gravity and dimensions
D-10.01.04	knowledge of working conditions which may affect rigging such as acids and caustic substances

Sub-task**D-10.02 Rigs loads.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

D-10.02.01	knowledge of load weight
D-10.02.02	knowledge of lifting points
D-10.02.03	knowledge of centre of gravity
D-10.02.04	knowledge of capacities of rigging
D-10.02.05	knowledge of site-specific regulations regarding rigging
D-10.02.06	knowledge of Occupational Health and Safety (OH&S) regulations
D-10.02.07	ability to select appropriate hitch
D-10.02.08	ability to use lifting bars, beams and rigging components

Sub-task**D-10.03****Monitors rigging.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

D-10.03.01	knowledge of manufacturers' specifications
D-10.03.02	knowledge of rigging position on lift
D-10.03.03	ability to identify rigging hazards during lifting
D-10.03.04	ability to assess the importance of the rigger in a blind lift

BLOCK E

LIFT PLANNING, SITE PREPARATION AND CRANE SETUP

Context	Pre-lift plans can run from a brief informal plan to a detailed process involving many other parties such as companies, engineers, customers and sub-contractors. One of the steps involved in pre-lift planning is the setup of the crane. Proper setup and positioning of the crane is the basis of all safe lifting operations.
Trends	Pre-lift planning, including job safety analysis, is becoming more formal and more common in order to perform a safe lift.
Related Components (including, but not limited to)	All components apply.
Tools and Equipment	Calculator, measuring equipment, levels, PPE and safety equipment, crane load chart and rigging capacity card.

Task 11

Performs pre-lift planning.

Sub-task

E-11.01 Participates in routine, engineered and specialty lift planning.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

E-11.01.01	knowledge of factors affecting the lift such as tail swing, load path and clearances
E-11.01.02	knowledge of roles and responsibilities of all persons involved with the lift
E-11.01.03	ability to organize the sequence of operations

Sub-task**E-11.02 Assesses risks and hazards.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

E-11.02.01	knowledge of applicable standards and guidelines
E-11.02.02	knowledge of hazards such as overhead obstructions, power lines, and above and underground obstacles
E-11.02.03	ability to recommend controls to eliminate or minimize risks and hazards

Task 12**Sets up crane.**

Sub-task**E-12.01 Performs final site inspection.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

E-12.01.01	knowledge of recommended controls to minimize or eliminate risks and hazards
E-12.01.02	ability to ensure site hazards have been minimized or eliminated

Sub-task**E-12.02 Positions crane.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

E-12.02.01	knowledge of the requirements of the job such as radius, clearances, crane dimensions and load dimensions
E-12.02.02	ability to determine crane location
E-12.02.03	ability to establish point of reference

Sub-task**E-12.03 Completes setup.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

E-12.03.01	knowledge of setup procedures as per manufacturers' specifications
E-12.03.02	knowledge of site requirements for blocking
E-12.03.03	ability to block, extend and set outriggers
E-12.03.04	ability to level the crane using outriggers or shimming/blocking tracks
E-12.03.05	ability to recheck radius
E-12.03.06	ability to recheck turntable level and ground conditions

BLOCK F

CRANE ASSEMBLY, DISASSEMBLY AND TRANSPORT

Context	Mobile crane operators need to disassemble cranes in order to transport them to and from jobsites. Disassembly of the crane may be necessary to comply with road regulations. Cranes can be transported by truck, rail, barge or can be self-propelled. Once the crane arrives at the jobsite, its components need to be assembled.
Trends	There is an increase in the size and complexity of cranes and attachments. They require more time, workers and equipment to assemble and disassemble. Foreign cranes and attachments are being introduced into the Canadian market.
Related Components (including, but not limited to)	All components apply.
Tools and Equipment	See Appendix A.

Task 13

Loads and unloads components for transport.

Sub-task

F-13.01 Loads crane and components.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-13.01.01	knowledge of centre of gravity
F-13.01.02	knowledge of types of rigging such as synthetic and wire rope slings
F-13.01.03	knowledge of manufacturers' specifications such as hook-up points and component weight
F-13.01.04	knowledge of types of tie downs such as chain, cable, turnbuckles and synthetic belts

F-13.01.05	ability to determine lifting points
F-13.01.06	ability to select assist crane according to weights and radius
F-13.01.07	ability to distribute crane and component weight on carrier according to regulations
F-13.01.08	ability to secure crane and components on carriers such as flatbeds, lo-boys, barge and rail

Sub-task

F-13.02 Unloads crane and components.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-13.02.01	knowledge of centre of gravity
F-13.02.02	knowledge of types of rigging such as synthetic and wire rope slings
F-13.02.03	knowledge of manufacturers' specifications such as hook-up points and component weight
F-13.02.04	knowledge of removal sequence for assembly
F-13.02.05	ability to remove tie downs
F-13.02.06	ability to select assist crane according to weights and radius

Task 14

Drives cranes on public roadways and jobsites.

Sub-task

F-14.01 Performs pre-trip planning.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-14.01.01	knowledge of route restrictions such as weight, height and width
F-14.01.02	ability to read maps
F-14.01.03	ability to interpret permits

Sub-task**F-14.02 Prepares crane for transport.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-14.02.01	knowledge of weight restrictions
F-14.02.02	knowledge of components to remove and removal procedures
F-14.02.03	knowledge of jurisdictional regulations for travel procedures such as using a boom dolly
F-14.02.04	knowledge of manufacturers' specifications
F-14.02.05	knowledge of motor vehicle inspection requirements
F-14.02.06	ability to set crane to travel mode
F-14.02.07	ability to fuel crane
F-14.02.08	ability to visually inspect crane for defects such as burnt out lights, low tire pressure and unsecured components
F-14.02.09	ability to check all operator cab components such as wipers, heaters, defrosters and mirrors
F-14.02.10	ability to check for safety equipment such as road flares, fire extinguishers and reflectors
F-14.02.11	ability to check brakes
F-14.02.12	ability to install and remove various types of boom dollies

Sub-task**F-14.03 Drives cranes on public roadways.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-14.03.01	knowledge of licensing requirements
F-14.03.02	knowledge of speed limits
F-14.03.03	knowledge of route restrictions such as weight, height and width
F-14.03.04	knowledge of stopping distances
F-14.03.05	knowledge of terrain

F-14.03.06	knowledge of crane height and length
F-14.03.07	knowledge of turning radius for boom dollies and boom tip
F-14.03.08	ability to maintain distance

Sub-task

F-14.04 Drives cranes on jobsites.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-14.04.01	knowledge of speed limits
F-14.04.02	knowledge of site conditions such as ground condition and location of utilities
F-14.04.03	knowledge of site regulations
F-14.04.04	knowledge of manufacturers' travel mode
F-14.04.05	ability to identify hazards and obstacles such as overhead power lines and other equipment

Task 15

Assembles and disassembles crawler and truck-mounted lattice cranes.

Sub-task

F-15.01 Installs tracks on car body.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-15.01.01	knowledge of lifting points
F-15.01.02	knowledge of component weight
F-15.01.03	knowledge of installation procedures as per manufacturers' specifications
F-15.01.04	knowledge of pinch points
F-15.01.05	knowledge of blocking
F-15.01.06	ability to remove debris from track

F-15.01.07	ability to rig track
F-15.01.08	ability to check for defects such as worn chains, missing bolts, broken track pads and sprockets
F-15.01.09	ability to install fasteners
F-15.01.10	ability to connect hoses
F-15.01.11	ability to adjust track and chain tension

Sub-task

F-15.02 Installs house.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-15.02.01	knowledge of lifting points
F-15.02.02	knowledge of component weight
F-15.02.03	knowledge of installation procedures as per manufacturers' specifications
F-15.02.04	knowledge of rigging and hardware
F-15.02.05	ability to check for defects such as worn bolts, pins and bushings
F-15.02.06	ability to service at lubrication points
F-15.02.07	ability to adjust tolerances
F-15.02.08	ability to clean parts
F-15.02.09	ability to install fasteners

Sub-task

F-15.03 Installs outrigger boxes on truck-mounted lattice cranes.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-15.03.01	knowledge of lifting points
F-15.03.02	knowledge of component weight
F-15.03.03	knowledge of installation procedures as per manufacturers' specifications
F-15.03.04	knowledge of rigging and hardware

F-15.03.05	ability to check for defects such as damaged hoses, fittings and cylinders
F-15.03.06	ability to clean fittings
F-15.03.07	ability to connect hoses
F-15.03.08	ability to install fasteners

Sub-task

F-15.04 Installs boom base.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-15.04.01	knowledge of lifting points
F-15.04.02	knowledge of component weight
F-15.04.03	knowledge of installation procedures as per manufacturers' specifications
F-15.04.04	knowledge of rigging and hardware
F-15.04.05	knowledge of installation of bridle and boom stops
F-15.04.06	ability to lubricate pins and bushings
F-15.04.07	ability to check for defects such as worn bushings and damaged chord and lacing
F-15.04.08	ability to clean components
F-15.04.09	ability to install fasteners

Sub-task

F-15.05 Assembles boom and jib.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-15.05.01	knowledge of lifting points
F-15.05.02	knowledge of component weight
F-15.05.03	knowledge of installation procedures as per manufacturers' specifications
F-15.05.04	knowledge of rigging and hardware

F-15.05.05	ability to check for defects such as damaged chord, lacing, pendant bars and pendant lines
F-15.05.06	ability to lubricate pins and sheaves
F-15.05.07	ability to install fasteners

Sub-task

F-15.06 Installs counterweights on crawler and truck-mounted lattice cranes.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-15.06.01	knowledge of lifting points
F-15.06.02	knowledge of component weight
F-15.06.03	knowledge of installation procedures as per manufacturers' specifications
F-15.06.04	knowledge of rigging and hardware
F-15.06.05	ability to check for defects such as broken bolts, damaged threads and damaged pins
F-15.06.06	ability to clean component surfaces
F-15.06.07	ability to operate controls
F-15.06.08	ability to install fasteners

Sub-task

F-15.07 Installs hoist lines, hook blocks and overhaul ball on crawler and truck-mounted lattice cranes.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-15.07.01	knowledge of manufacturers' specifications
F-15.07.02	knowledge of reeving and lacing
F-15.07.03	knowledge of hook block and overhaul ball capacity
F-15.07.04	ability to install socket and wedge
F-15.07.05	ability to use cable cutting equipment such as cutting torches and angle grinders

F-15.07.06	ability to seize wire rope lines
F-15.07.07	ability to check for defects such as broken wires in hoist line and damaged socket and wedge
F-15.07.08	ability to check spooling
F-15.07.09	ability to lubricate hook blocks
F-15.07.10	ability to inspect hooks for hook latches
F-15.07.11	ability to lubricate wire ropes
F-15.07.12	ability to install wire rope clips on dead ends
F-15.07.13	ability to install fasteners

Sub-task

F-15.08 Removes hoist lines, hook blocks and overhaul ball from crawler and truck-mounted lattice cranes.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-15.08.01	knowledge of manufacturers' specifications
F-15.08.02	knowledge of reeving and lacing
F-15.08.03	ability to remove fasteners
F-15.08.04	ability to remove wire rope clips on dead ends
F-15.08.05	ability to remove socket and wedge
F-15.08.06	ability to check for defects such as broken wires in hoist line and damaged socket and wedge
F-15.08.07	ability to check spooling
F-15.08.08	ability to inspect hooks for damage and hook latches
F-15.08.09	ability to remove hoist line
F-15.08.10	ability to lubricate wire ropes

Sub-task**F-15.09 Disassembles boom and jib.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-15.09.01	knowledge of lifting points
F-15.09.02	knowledge of component weight
F-15.09.03	knowledge of disassembly procedures as per manufacturers' specifications
F-15.09.04	knowledge of rigging and hardware
F-15.09.05	ability to check for defects such as damaged chord, lacing, pendant bars and pendant lines
F-15.09.06	ability to remove jib
F-15.09.07	ability to protect hardware
F-15.09.08	ability to remove boom

Sub-task**F-15.10 Removes counterweights from crawler and truck-mounted lattice cranes.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-15.10.01	knowledge of lifting points
F-15.10.02	knowledge of component weight
F-15.10.03	knowledge of disassembly procedures as per manufacturers' specifications
F-15.10.04	knowledge of rigging and hardware
F-15.10.05	ability to remove fasteners
F-15.10.06	ability to check for defects such as broken bolts, and damaged threads and pins
F-15.10.07	ability to protect hardware
F-15.10.08	ability to operate controls

Sub-task**F-15.11 Removes boom base.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-15.11.01	knowledge of lifting points
F-15.11.02	knowledge of component weight
F-15.11.03	knowledge of disassembly procedures as per manufacturers' specifications
F-15.11.04	knowledge of rigging and hardware
F-15.11.05	knowledge of bridle and boom stops removal
F-15.11.06	ability to remove fasteners
F-15.11.07	ability to check for defects such as worn bushings and damaged chord and lacing
F-15.11.08	ability to protect hardware

Sub-task**F-15.12 Removes house.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-15.12.01	knowledge of lifting points
F-15.12.02	knowledge of component weight
F-15.12.03	knowledge of disassembly procedures as per manufacturers' specifications
F-15.12.04	knowledge of rigging and hardware
F-15.12.05	ability to remove fasteners
F-15.12.06	ability to check for defects such as worn bolts, pins and bushings
F-15.12.07	ability to clean parts
F-15.12.08	ability to protect hardware

Sub-task**F-15.13 Removes tracks from car body.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-15.13.01	knowledge of lifting points
F-15.13.02	knowledge of component weight
F-15.13.03	knowledge of disassembly procedures as per manufacturers' specifications
F-15.13.04	knowledge of pinch points
F-15.13.05	knowledge of blocking
F-15.13.06	ability to remove fasteners
F-15.13.07	ability to remove hoses
F-15.13.08	ability to remove debris from tracks
F-15.13.09	ability to rig track for removal
F-15.13.10	ability to check for defects

Sub-task**F-15.14 Removes outrigger boxes from truck-mounted lattice cranes.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-15.14.01	knowledge of lifting points
F-15.14.02	knowledge of component weight
F-15.14.03	knowledge of disassembly procedures as per manufacturers' specifications
F-15.14.04	knowledge of rigging and hardware
F-15.14.05	ability to remove fasteners
F-15.14.06	ability to check for defects such as damaged hoses, fittings and cylinders
F-15.14.07	ability to disconnect hoses
F-15.14.08	ability to protect fittings and hoses
F-15.14.09	ability to use spill kit

Task 16**Assembles and disassembles truck-mounted and all-terrain (AT) hydraulic cranes.****Sub-task****F-16.01 Installs outrigger boxes on truck-mounted and AT hydraulic cranes.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-16.01.01	knowledge of lifting points
F-16.01.02	knowledge of component weight
F-16.01.03	knowledge of installation procedures as per manufacturers' specifications
F-16.01.04	knowledge of rigging
F-16.01.05	knowledge of hydraulic pressure
F-16.01.06	ability to check for defects such as damaged hoses, fittings and cylinders
F-16.01.07	ability to clean fittings
F-16.01.08	ability to connect hoses
F-16.01.09	ability to install fasteners

Sub-task**F-16.02 Installs hoist lines, hook blocks and overhaul ball on truck-mounted and AT hydraulic cranes.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-16.02.01	knowledge of manufacturers' specifications
F-16.02.02	knowledge of reeving and lacing
F-16.02.03	knowledge of hook block and overhaul ball capacity
F-16.02.04	ability to install socket and wedge
F-16.02.05	ability to use cable cutting equipment such as cutting torches and angle grinders
F-16.02.06	ability to seize wire rope lines
F-16.02.07	ability to check for defects such as broken wires in hoist line and damaged socket and wedge

F-16.02.08	ability to check spooling
F-16.02.09	ability to lubricate hook blocks
F-16.02.10	ability to inspect hooks for hook latches
F-16.02.11	ability to install fasteners

Sub-task

F-16.03 Installs counterweights on truck-mounted and AT hydraulic cranes.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-16.03.01	knowledge of lifting points
F-16.03.02	knowledge of component weight
F-16.03.03	knowledge of installation procedures as per manufacturers' specifications
F-16.03.04	knowledge of rigging and hardware
F-16.03.05	ability to check for defects such as broken bolts, and damaged threads and pins
F-16.03.06	ability to clean components surfaces
F-16.03.07	ability to operate controls
F-16.03.08	ability to install fasteners

Sub-task

F-16.04 Installs swing-away jib and jib on truck-mounted and AT hydraulic cranes.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-16.04.01	knowledge of lifting points
F-16.04.02	knowledge of component weight
F-16.04.03	knowledge of installation procedures as per manufacturers' specifications
F-16.04.04	knowledge of rigging and hardware
F-16.04.05	ability to check for defects such as bent lacing, damaged chords and broken wires

F-16.04.06	ability to install electrical and hydraulic connections
F-16.04.07	ability to adjust offset
F-16.04.08	ability to connect operator aids such as anemometer and anti-two block
F-16.04.09	ability to install fasteners
F-16.04.10	ability to pull out extensions

Sub-task

F-16.05 Removes swing-away jib and jib from truck-mounted and AT hydraulic cranes.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-16.05.01	knowledge of lifting points
F-16.05.02	knowledge of component weight
F-16.05.03	knowledge of disassembly procedures as per manufacturers' specifications
F-16.05.04	knowledge of rigging and hardware
F-16.05.05	ability to remove fasteners
F-16.05.06	ability to disconnect operator aids such as anemometer and anti-two block
F-16.05.07	ability to adjust offset
F-16.05.08	ability to disconnect electrical and hydraulic connections
F-16.05.09	ability to check for defects such as bent lacing, damaged chords and broken wires
F-16.05.10	ability to pull in extensions
F-16.05.11	ability to stow swing-away and jib

Sub-task

F-16.06 Removes counterweights for truck-mounted and AT hydraulic cranes.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-16.06.01	knowledge of lifting points
F-16.06.02	knowledge of component weight
F-16.06.03	knowledge of disassembly procedures as per manufacturers' specifications
F-16.06.04	knowledge of rigging and hardware
F-16.06.05	ability to remove fasteners
F-16.06.06	ability to check for defects such as broken bolts, and damaged threads and pins
F-16.06.07	ability to protect hardware
F-16.06.08	ability to operate controls

Sub-task

F-16.07 Removes hoist lines, hook blocks and overhaul ball from truck-mounted and AT hydraulic cranes.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-16.07.01	knowledge of manufacturers' specifications
F-16.07.02	knowledge of reeving and lacing
F-16.07.03	ability to remove fasteners
F-16.07.04	ability to remove socket and wedge
F-16.07.05	ability to check for defects such as broken wires in hoist line and damaged socket and wedge
F-16.07.06	ability to check spooling
F-16.07.07	ability to inspect hooks for hook latches
F-16.07.08	ability to remove hoist line
F-16.07.09	ability to lubricate wire ropes

Sub-task

F-16.08 Removes outrigger boxes from truck-mounted and AT hydraulic cranes.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-16.08.01	knowledge of lifting points
F-16.08.02	knowledge of component weight
F-16.08.03	knowledge of disassembly procedures as per manufacturers' specifications
F-16.08.04	knowledge of rigging
F-16.08.05	knowledge of hydraulic pressure
F-16.08.06	ability to remove fasteners
F-16.08.07	ability to check for defects such as damaged hoses, fittings and cylinders
F-16.08.08	ability to disconnect hoses
F-16.08.09	ability to protect fittings and hoses
F-16.08.10	ability to use spill kit

Task 17**Assembles and disassembles rough-terrain (RT) cranes.**

Sub-task

F-17.01 Installs counterweights on RT cranes.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-17.01.01	knowledge of lifting points
F-17.01.02	knowledge of component weight
F-17.01.03	knowledge of installation procedures as per manufacturers' specifications
F-17.01.04	knowledge of rigging and hardware
F-17.01.05	ability to check for defects such as broken bolts, and damaged threads and pins

F-17.01.06	ability to clean component surfaces
F-17.01.07	ability to operate controls
F-17.01.08	ability to install fasteners

Sub-task

F-17.02 Installs swing-away jib and jib on RT cranes.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-17.02.01	knowledge of lifting points
F-17.02.02	knowledge of component weight
F-17.02.03	knowledge of installation procedures as per manufacturers' specifications
F-17.02.04	knowledge of rigging and hardware
F-17.02.05	ability to check for defects such as bent lacing, damaged chords and broken wires
F-17.02.06	ability to connect electrical and hydraulic connections
F-17.02.07	ability to adjust jib offset
F-17.02.08	ability to connect operator aids such as anemometer and anti-two block
F-17.02.09	ability to install fasteners
F-17.02.10	ability to pull out extensions

Sub-task

F-17.03 Removes counterweights from RT cranes.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-17.03.01	knowledge of lifting points
F-17.03.02	knowledge of component weight
F-17.03.03	knowledge of disassembly procedures as per manufacturers' specifications
F-17.03.04	knowledge of rigging and hardware
F-17.03.05	ability to remove fasteners

F-17.03.06	ability to check for defects such as broken bolts, and damaged threads and pins
F-17.03.07	ability to protect hardware
F-17.03.08	ability to operate controls

Sub-task

F-17.04 Removes swing-away jib and jib from RT cranes.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-17.04.01	knowledge of lifting points
F-17.04.02	knowledge of component weight
F-17.04.03	knowledge of disassembly procedures as per manufacturers' specifications
F-17.04.04	knowledge of rigging and hardware
F-17.04.05	ability to remove fasteners
F-17.04.06	ability to disconnect operator aids such as anemometer and anti-two block
F-17.04.07	ability to adjust offset
F-17.04.08	ability to disconnect electrical and hydraulic connections
F-17.04.09	ability to check for defects such as bent lacing, damaged chords and broken wires
F-17.04.10	ability to pull in extensions
F-17.04.11	ability to stow swing-away jib and jib

Task 18**Assembles and disassembles specialty equipment and attachments.****Sub-task****F-18.01 Assembles specialty equipment and attachments.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-18.01.01	knowledge of crane and components
F-18.01.02	knowledge of types of specialty equipment such as piledriver, clamshell and dragline
F-18.01.03	knowledge of types of attachments such as ringer, tower attachment, luffing jib and superlift
F-18.01.04	knowledge of specialty equipment applications
F-18.01.05	knowledge of installation procedures as per manufacturers' specifications
F-18.01.06	ability to check for defects such as damaged chords and lacing, and broken wire rope
F-18.01.07	ability to service at lubrication points
F-18.01.08	ability to select assembly area

Sub-task**F-18.02 Disassembles specialty equipment and attachments.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

F-18.02.01	knowledge of crane and components
F-18.02.02	knowledge of types of specialty equipment such as piledriver, clamshell and dragline
F-18.02.03	knowledge of types of attachments such as ringer, tower attachment, luffing jib and superlift
F-18.02.04	knowledge of specialty equipment applications

- F-18.02.05 knowledge of disassembly procedures as per manufacturers' specifications
- F-18.02.06 ability to check for defects such as damaged chords and lacing, and broken wire rope
- F-18.02.07 ability to select disassembly area

BLOCK G

CRANE OPERATION

Context	Mobile crane operators must adapt to a variety of crane types and operations. Some mobile crane operators specialize in one type of crane operation while others may diversify their activities.
Trends	There is more sophisticated equipment for operating cranes, making it important for crane operators to upgrade their skills through regular training. Crane cabs and controls are being designed with better ergonomics. There is more variety in the types of cranes with bigger cranes entering the market.
Related Components (including, but not limited to)	All components apply.
Tools and Equipment	PPE and safety equipment.

Task 19

Performs basic craning operations.

Sub-task

G-19.01 Uses computer and computerized components for crane operations.

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-19.01.01	knowledge of crane manufacturers' procedures for computer setup
G-19.01.02	ability to prepare computer for crane operations
G-19.01.03	ability to program range limiting device according to potential hazards
G-19.01.04	ability to use LMI and load-monitoring devices
G-19.01.05	ability to use anti-two block system

Sub-task**G-19.02 Raises/lowers load.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-19.02.01 knowledge of manufacturers' recommended procedures and working practices as described in the operator manual

G-19.02.02 ability to operate controls to raise and lower the load

Sub-task**G-19.03 Swings crane.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-19.03.01 knowledge of manufacturers' recommended procedures and working practices as described in the operator manual

G-19.03.02 ability to operate controls to swing crane

Sub-task**G-19.04 Raises/lowers boom.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-19.04.01 knowledge of manufacturers' recommended procedures and working practices as described in the operator manual

G-19.04.02 ability to operate controls to raise and lower the boom

Sub-task**G-19.05 Operates telescopic boom.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-19.05.01	knowledge of manufacturers' recommended procedures and working practices as described in the operator manual
G-19.05.02	knowledge of manufacturers' boom extension pinning sequence
G-19.05.03	ability to operate controls to extend and retract boom

Task 20**Operates friction drive lattice boom cranes.**

Sub-task**G-20.01 Operates friction drive crawler-mounted lattice boom cranes.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-20.01.01	knowledge of manufacturers' recommended procedures and working practices as described in the operator manual
G-20.01.02	knowledge of power flows and power transmission
G-20.01.03	ability to coordinate clutch and brake operation to control the load
G-20.01.04	ability to judge terrain for pick and carry operations
G-20.01.05	ability to pick and carry load

Sub-task**G-20.02 Operates friction drive truck-mounted lattice boom cranes.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-20.02.01	knowledge of manufacturers' recommended procedures and working practices as described in the operator manual
G-20.02.02	knowledge of power flows and power transmission
G-20.02.03	ability to move the crane on rubber when it is fully assembled
G-20.02.04	ability to coordinate clutch and brake to control crane operations

Task 21**Operates hydraulic drive lattice boom cranes.**

Sub-task**G-21.01 Operates hydraulic drive crawler-mounted lattice boom cranes.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-21.01.01	knowledge of manufacturers' recommended procedures and working practices as described in the operator manual
G-21.01.02	knowledge of basic hydraulic systems
G-21.01.03	ability to judge terrain for pick and carry operations
G-21.01.04	ability to pick and carry

Sub-task**G-21.02 Operates hydraulic drive truck-mounted lattice boom cranes.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-21.02.01	knowledge of manufacturers' recommended procedures and working practices as described in the operator manual
G-21.02.02	knowledge of basic hydraulic systems
G-21.02.03	ability to move the crane on rubber when it is fully assembled

Task 22**Operates hydraulic boom cranes.**

Sub-task**G-22.01 Operates RT cranes.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-22.01.01	knowledge of manufacturers' recommended procedures and working practices as described in the operator manual
G-22.01.02	knowledge of basic hydraulic systems
G-22.01.03	knowledge of characteristics of RT cranes such as manoeuvrability and compact size
G-22.01.04	ability to judge terrain for pick and carry operations
G-22.01.05	ability to pick and carry

Sub-task**G-22.02 Operates AT cranes.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-22.02.01	knowledge of manufacturers' recommended procedures and working practices as described in the operator manual
G-22.02.02	knowledge of basic hydraulic systems
G-22.02.03	knowledge of operations and limitations of the suspension system
G-22.02.04	knowledge of characteristics of AT cranes such as manoeuvrability and ease in setup
G-22.02.05	ability to move the crane when it is fully assembled

Sub-task**G-22.03 Operates truck-mounted hydraulic cranes.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-22.03.01	knowledge of manufacturers' recommended procedures and working practices as described in the operator manual
C-22.03.02	knowledge of basic hydraulic systems
G-22.03.03	ability to judge terrain for travel
G-22.03.04	ability to move the crane when it is fully assembled

Sub-task**G-22.04 Operates boom truck.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-22.04.01	knowledge of manufacturers' recommended procedures and working practices as described in the operator manual
G-22.04.02	knowledge of basic hydraulic systems
G-22.04.03	knowledge of truck and chassis onto which crane is mounted
G-22.04.04	ability to place and secure load on deck

Task 23**Performs specialty craning operations.**

Sub-task**G-23.01 Operates piledriver.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-23.01.01	knowledge of types of hammers such as drop, diesel, vibratory and air hammers
G-23.01.02	knowledge of types of leads
G-23.01.03	ability to coordinate hammer operation with hand-foot-eye coordination

Sub-task**G-23.02 Operates clamshell.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-23.02.01	knowledge of clamshell operations
G-23.02.02	knowledge of weight of materials
G-23.02.03	knowledge of duty cycle consideration
G-23.02.04	ability to coordinate clamshell operation with hand-foot-eye coordination
G-23.02.05	ability to synchronize drums
G-23.02.06	ability to run two separate drums at the same time
G-23.02.07	ability to change wire ropes

Sub-task**G-23.03 Operates dragline.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-23.03.01	knowledge of dragline operations
G-23.03.02	knowledge of weight of materials
G-23.03.03	knowledge of duty cycle considerations
G-23.03.04	ability to coordinate dragline operation with hand-foot-eye coordination
G-23.03.05	ability to run two separate drums at the same time
G-23.03.06	ability to change wire ropes and teeth
G-23.03.07	ability to lay out swamp mats

Sub-task**G-23.04 Operates cranes on barges.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	no	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-23.04.01	knowledge of factors affecting crane operation such as tides, current, ballast conditions and spud operation
G-23.04.02	knowledge of manufacturers' marine chart and specifications
G-23.04.03	knowledge of mat placement for travelling the crane
G-23.04.04	ability to secure crane and boom to barge
G-23.04.05	ability to assess weather conditions
G-23.04.06	ability to adapt to variable conditions that affect operations such as weather and tides

Sub-task**G-23.05 Performs wrecking ball operations.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	no	no	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-23.05.01	knowledge of sizes of wrecking balls
G-23.05.02	knowledge of procedures and sequence of demolition
G-23.05.03	ability to coordinate wrecking ball operation with hand-foot-eye coordination

Sub-task**G-23.06 Operates magnet.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-23.06.01 knowledge of magnet manufacturers' specifications

G-23.06.02 knowledge of duty cycle consideration

G-23.06.03 ability to coordinate magnet and crane operation

Sub-task**G-23.07 Operates heavy lift attachments.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-23.07.01 knowledge of types of heavy lift attachments such as superlifts, masts and ringers

G-23.07.02 knowledge of heavy lift operations and procedures

G-23.07.03 ability to set up heavy lift equipment

G-23.07.04 ability to interpret load charts for heavy lifts

Sub-task**G-23.08 Operates tower attachment and luffing jib.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-23.08.01 knowledge of attachments for tower configurations

G-23.08.02 knowledge of attachments for luffing jibs

G-23.08.03 ability to interpret manufacturers' drawings for installing attachments

G-23.08.04 ability to recognize change of function in control levers

Sub-task**G-23.09 Performs multi-crane lifts.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-23.09.01	knowledge of capacities of cranes involved in lift
G-23.09.02	knowledge of regulations regarding multi-crane lifts
G-23.09.03	knowledge of engineering drawings
G-23.09.04	knowledge of hazards specific to multi-crane lifts
G-23.09.05	ability to maintain constant communication with other crane operator(s) and lift supervisor
G-23.09.06	ability to assess lift conditions during multi-crane lift
G-23.09.07	ability to maintain constant load conditions

Sub-task**G-23.10 Uses personnel hoisting equipment.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-23.10.01	knowledge of types of personnel hoisting equipment such as fixed basket and suspended basket
G-23.10.02	knowledge of rigging of personnel hoisting equipment
G-23.10.03	knowledge of regulations regarding personnel hoisting procedures
G-23.10.04	ability to attach personnel hoisting equipment
G-23.10.05	ability to interpret engineer requirements for capacity of basket
G-23.10.06	ability to perform test run at maximum weight capacity

Sub-task**G-23.11 Operates drilling attachment.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-23.11.01	knowledge of drilling attachments
G-23.11.02	knowledge of drilling procedures
G-23.11.03	ability to operate controls for drilling attachment
G-23.11.04	ability to rig drilling attachment
G-23.11.05	ability to coordinate operation with hand-foot-eye coordination

Sub-task**G-23.12 Operates knuckle boom trucks.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-23.12.01	knowledge of knuckle boom control levers and remote control apparatus
G-23.12.02	knowledge of truck and chassis onto which knuckle boom is mounted
G-23.12.03	ability to set up knuckle boom
G-23.12.04	ability to recognize hazards specific to knuckle boom operation indoors
G-23.12.05	ability to rig loads on knuckle boom
G-23.12.06	ability to use rigging attachments such as pallet forks, timber tongs and barrel clamps

Task 24**Secures crane.**

Sub-task**G-24.01 Secures crane for short term.**

<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-24.01.01	knowledge of procedures for securing crane
G-24.01.02	knowledge of manufacturers' recommendations for securing crane
G-24.01.03	knowledge of government regulations for securing crane
G-24.01.04	knowledge of company policies for securing crane
G-24.01.05	ability to engage positive swing lock
G-24.01.06	ability to secure swing brake
G-24.01.07	ability to engage hoist brake
G-24.01.08	ability to engage boom pawl
G-24.01.09	ability to disengage master clutch

Sub-task**G-24.02 Secures crane for long term.**

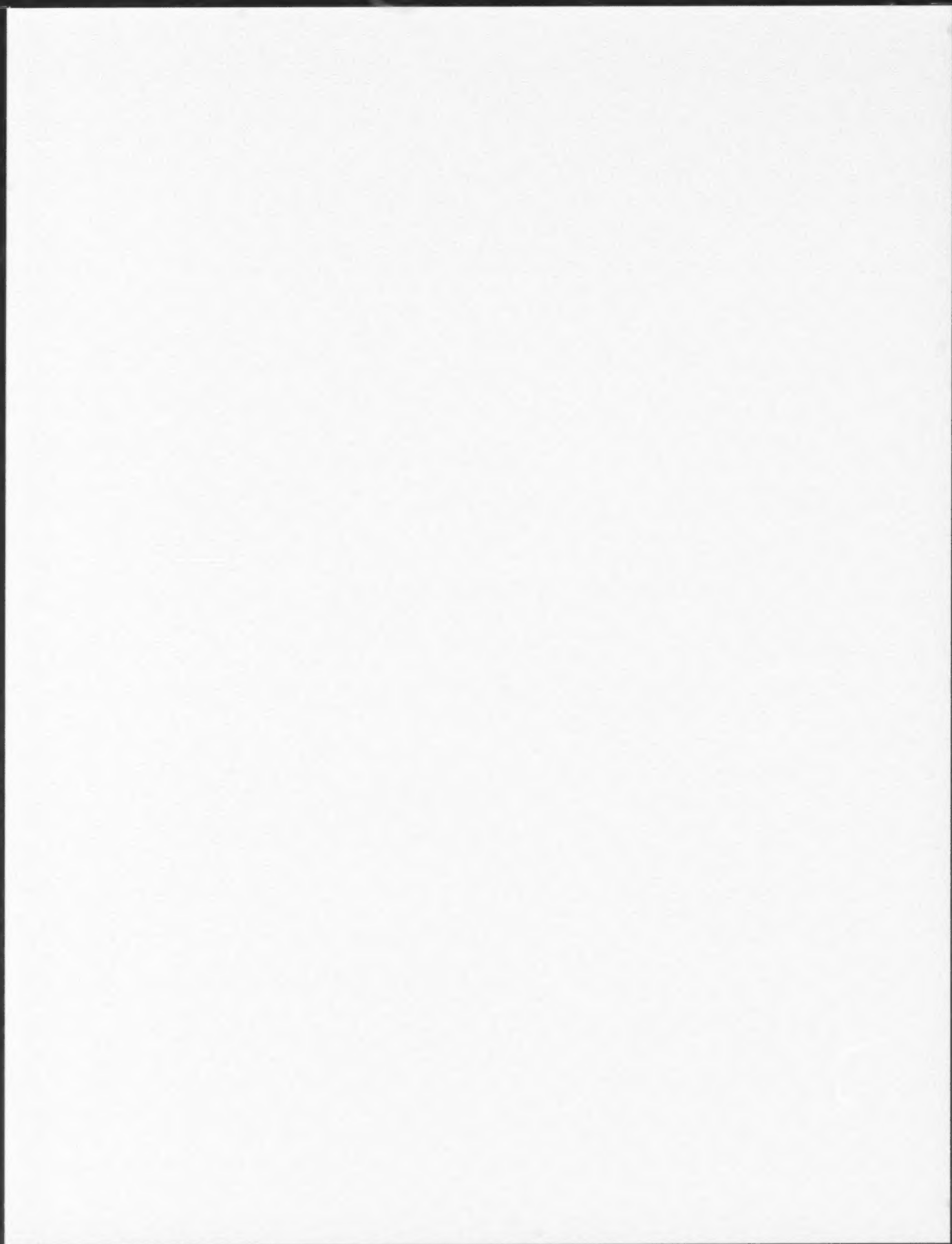
<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>
yes	yes	NV	NV	yes	yes	NV	yes	yes	yes	NV	ND	NV

Supporting Knowledge and Abilities

G-24.02.01	knowledge of procedures for securing crane
G-24.02.02	knowledge of manufacturers' recommendations for securing crane
G-24.02.03	knowledge of government regulations for securing crane
G-24.02.04	knowledge of company policies for securing crane
G-24.02.05	knowledge of surrounding area
G-24.02.06	ability to lower boom to the ground
G-24.02.07	ability to tie off hoist lines
G-24.02.08	ability to engage positive swing lock
G-24.02.09	ability to secure swing brake

- G-24.02.10 ability to engage hoist brake
- G-24.02.11 ability to engage boom pawl
- G-24.02.12 ability to disengage master clutch
- G-24.02.13 ability to turn off master switch

APPENDICES



APPENDIX A

TOOLS AND EQUIPMENT

Hand Tools

adjustable wrenches (various sizes)	shovel
calculator	snips (heavy duty wire cutting)
come-alongs (wire rope or chain)	sprayer
flashlight	spud wrenches
grease gun	squeegee
hammers (ball peen, claw, sledge, various sizes)	tag lines
level	tire pressure gauge
line-up bar, drift pin, T-bar	tool box
measuring tape	torque wrenches (various sizes)
oilcan	vernier caliper
pliers (needle nose, slip joint)	vice grips
pry bars	wear gauge (wire rope and sheave)
punches (knock-out type, various sizes)	wire brush
ratchet set	wire rope cutter
scales	wire rope winder
scrapers (various sizes)	wrench sets (open and closed ends, both metric and imperial)
screwdrivers (flat, Phillips, Robertson, various sizes)	

Power Tools and Equipment

angle grinder with wire brush	impact wrenches (electric and pneumatic)
electric drills	oxy-acetylene brazing torch
forklift	oxy-acetylene cutting torch
hand-held and stationary radios	propane torch
headphones	saws
hydraulic jack	steam cleaner or power wash

Personal Protective Equipment and Safety Equipment

coveralls	goggles
ear-plugs and muffs	hard hat
eye wash station	masks (particles, vapour)
face shields	reflectors
fall arrest harness	respirators
fire blankets	road flares
fire extinguishers	safety boots
fire-retardant coverall	safety glasses
first aid kit	spill kit
gloves	survival suits

APPENDIX B

GLOSSARY

air system	any machine system that is dependent on compressed air; the brakes on certain carriers would be an example of this type of system
all-terrain (AT) crane	some models of all-terrain cranes can be configured to be driven from both the carrier and the upper; they usually have a "pick and carry" chart, and can be driven on public roads; they are rubber mounted (on tires); they have hydraulic suspension, which can be adjusted by the operator into "road" or "jobsite"; they always have hydraulic booms; these cranes usually have multiple axles, some of which may be "dead" and are for weight distribution only; they have manual rear steering in crab or cramp mode; many have automatic rear steering in cramp mode
anemometer	instrument for measuring and indicating the force or speed of the wind
attachments	accessories supplied by manufacturers to aid in crane operations
boom	the part of the crane that extends above the house (upper works or superstructure) and supports the line or lines to which the load is attached
car body	the frame of a chassis for a crawler crane to which the tracks and upper works attach
chassis	that part of the carrier that includes the steering and braking mechanisms, suspension, drive train and tracks or wheels
clamshell	special assembly installed at the lifting end of the hoist line that is designed to open and close in order to move mud, sand or other loose materials
controls	these include all levers, brakes, dogs, switches, buttons and other devices that the crane operator physically manipulates
counterweight	heavy metal or concrete attachments secured to the back of the upper works to offset the weight of the extended boom and load and increase lift capacity
crane log book	typically, a book in which the operator is required to record information, such as inspection, maintenance, locations, hours worked as well as damage and repair details
crawler crane	any mobile crane that uses a track-driven carrier
dragline	accessory installed at, and suspended by, the lifting end of the hoist line that is designed to scrape earth or other material into it as it is dragged toward the crane by a second drum

drum	a cylindrical component on the mobile crane that is used to store and dispense line; the line is wound or spooled onto the drum when the operator causes the drum to rotate
extend the boom	hydraulic cranes, in most cases, have one or more telescoping sections to the main boom; this is one feature that allows the operator to control the length of the boom
gross capacity	this is the maximum amount of weight that a specific crane and boom configuration can lift
gross load	the weight of the load plus other items, such as the hook block, hoist lines, rigging, etc.
hardware	usually refers to rigging hardware, which can be any of a wide range of bolts, hooks, chains, shackles, clamps and other mechanical devices used to secure or attach to loads in preparation for hoisting
hoist line	this may be a single line attached to a ball, lift hook or other assembly; the term hoist line may also be used to describe the compound assembly of lines running through the hook block
hoisting	the act of manipulating the crane controls in order to move a load
hook block	a heavy metal block containing sheaves or pulleys, located at the end of the hoist line on some cranes; the hook block is equipped with a hook for attachment of loads
house	that part of the mobile crane above the carrier which rotates and supports the boom, winches, cylinders and other components; also known as upper works or superstructure
hydraulic system	any system that relies on pressurized oil to make it function; the boom on hydraulic cranes is manipulated through the use of oil under pressure
jib	an extension attached to the boom point to provide added boom length for lifting specified loads; the jib may be in line with the boom or offset to various angles and is normally wire rope supported
levelling	the process of positioning the crane so that it is level before lifting a load
magnet	an attachment installed at the lifting end of the hoist line in order to lift and move metal
master clutch	some cranes are equipped with a control known as the master clutch which can be manipulated to engage and disengage the power source

multi-crane lifts	in some instances, it is impossible to accomplish certain lifts using only one crane; in these circumstances, two or more cranes may be attached to the same load and they are used simultaneously to perform the task
net capacity	this term applies to the weight of the item to be lifted by the crane (i.e. the gross capacity minus all capacity deductions)
net load	the load to be lifted without any deductions
outriggers	supports that extend from the carrier vehicle to the ground to provide stability; outriggers are composed of beams and jacks
overhaul ball	an iron ball placed above the hook on a lead line, which furnishes weight to allow the line to be lowered when no load is attached; also known as headache ball
pads	wood, metal, or synthetic assemblies that are placed under the adjustable ends of the outriggers or tracks; these items increase the amount of bearing and support given by the outriggers or the tracks to the crane
parts of line	the number of parts (individual ropes) of hoist line are calculated in accordance with the amount of weight to be hoisted; in some cases the operator must ensure that the load is lifted using a hook block that allows sufficient parts of line between the head, sheave and hook block to effectively move the load; all the parts of line are known as the hoist line
pawl	this term applies to any device or control that locks or stops machinery or components (usually winches) from rotating
piledriver	an attachment used to force metal, concrete or wooden pilings into the ground
radius	this is the horizontal distance from the centre of rotation of a crane to the centre of gravity of load with the load suspended
reeving	a method of rigging a block which results in even line pull on all sheaves; when viewed from the side, the line typically forms a "figure eight" profile
rig	describes the act of attaching loads to the hoist line
rigger	a designated individual whose duty it is to ensure that loads are appropriately attached or rigged to the hoist line of the crane

rough-terrain (RT) crane	rough-terrain cranes are driven from the upper; they are rubber mounted (on tires) and may be two wheel or all wheel drive; they may have automatic or manual rear steering; they have solid suspension and axle lockouts. RT cranes have off-road capability and typically can not be configured to drive on public roads; they have "on-rubber" charts
sheaves	the wheels or pulleys located in a hook block, boom heads, or other parts of the crane boom on which the line runs
signaller	a designated individual who relays information to the crane operator
sling	any metal or synthetic flexible device used to cradle or support a load
specialty equipment	equipment used for a specific operation
spooling	the process of winding line either onto or off of a drum on which it is stored
swing	rotating the upper works horizontally through part or all of the radius or circle
swing-away	a lattice extension pinned to the boom of a hydraulic crane; also called a jib or a fly
telescopic boom	a boom consisting of a base boom from which one or more boom sections are telescoped for additional length
tracks	the carrier system used to move certain cranes requires the use of tracks rather than wheels
truck-mounted crane	truck mounted cranes may have either lattice or hydraulic booms; the cranes are rubber mounted (on tires); these cranes must be driven from the carrier; they can be configured to be driven on public roads
wire rope	often referred to as cable, this material is made of many extremely strong and flexible metal alloy wires wound in various configurations to suit a range of conditions
wire rope cutter	a mechanical device especially designed to cut wire rope

APPENDIX C

ACRONYMS

AT	All-terrain
RT	Rough-terrain
PPE	Personal Protective Equipment
CSA	Canadian Standards Association
WHMIS	Workplace Hazardous Materials Information System
PLH	Power Line Hazards
WLL	Working Load Limit
LMI	Load Moment Indicator
OH&S	Occupational Health and Safety

APPENDIX D**BLOCK AND TASK WEIGHTING****BLOCK A OCCUPATIONAL SKILLS**

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	National Average
%	5	7	NV	NV	10	2	NV	5	5	10	NV	ND	NV	6%

Task 1 Uses tools and equipment.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	
%	30	30	NV	NV	30	20	NV	40	50	40	NV	ND	NV	34%

Task 2 Organizes work.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	
%	70	70	NV	NV	70	80	NV	60	50	60	NV	ND	NV	66%

BLOCK B HOISTING CALCULATIONS

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	National Average
%	15	20	NV	NV	17	20	NV	30	20	25	NV	ND	NV	21%

Task 3 Determines load weights.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	
%	20	20	NV	NV	35	35	NV	30	20	20	NV	ND	NV	26%

Task 4 Calculates crane capacity.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	
%	60	50	NV	NV	35	35	NV	40	40	60	NV	ND	NV	46%

Task 5 Performs rigging calculations.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	
%	20	30	NV	NV	30	30	NV	30	40	20	NV	ND	NV	28%

BLOCK C CRANE INSPECTION AND MAINTENANCE

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	National Average
%	10	13	NV	NV	10	15	NV	6	5	10	NV	ND	NV	10%

Task 6 Performs pre-operational checks and regular inspections.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	47%
%	50	50	NV	NV	34	65	NV	40	40	50	NV	ND	NV	

Task 7 Performs continual checks.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	28%
%	25	15	NV	NV	33	25	NV	30	40	25	NV	ND	NV	

Task 8 Performs minor crane maintenance.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	25%
%	25	35	NV	NV	33	10	NV	30	20	25	NV	ND	NV	

BLOCK D RIGGING

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	National Average
%	15	16	NV	NV	12	15	NV	10	15	15	NV	ND	NV	14%

Task 9 Inspects and maintains slings and hardware.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	34%
%	40	25	NV	NV	40	20	NV	40	25	50	NV	ND	NV	

Task 10 Follows rigging procedures.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	66%
%	60	75	NV	NV	60	80	NV	60	75	50	NV	ND	NV	

BLOCK E LIFT PLANNING, SITE PREPARATION AND CRANE SETUP

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	National Average
%	20	18	NV	NV	17	20	NV	12	25	10	NV	ND	NV	17%

Task 11 Performs pre-lift planning.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	41%
%	50	50	NV	NV	50	25	NV	40	50	25	NV	ND	NV	

Task 12 Sets up crane.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	59%
%	50	50	NV	NV	50	75	NV	60	50	75	NV	ND	NV	

BLOCK F CRANE ASSEMBLY, DISASSEMBLY AND TRANSPORT

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	National Average
%	10	10	NV	NV	17	8	NV	12	10	10	NV	ND	NV	11%

Task 13 Loads and unloads components for transport.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	14%
%	5	20	NV	NV	5	20	NV	15	20	10	NV	ND	NV	

Task 14 Drives cranes on public roadways and jobsites.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	14%
%	15	10	NV	NV	20	20	NV	15	10	10	NV	ND	NV	

Task 15 Assembles and disassembles crawler and truck-mounted lattice cranes.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	27%
%	25	25	NV	NV	30	20	NV	20	30	40	NV	ND	NV	

Task 16 Assembles and disassembles truck-mounted and all-terrain (AT) hydraulic cranes.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	20%
%	25	25	NV	NV	20	20	NV	20	25	5	NV	ND	NV	

Task 17 Assembles and disassembles rough-terrain (RT) cranes.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	
%	25	10	NV	NV	10	10	NV	20	5	5	NV	ND	NV	12%

Task 18 Assembles and disassembles specialty equipment and attachments.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	
%	5	10	NV	NV	15	10	NV	10	10	30	NV	ND	NV	13%

BLOCK G CRANE OPERATION

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	National Average
%	25	16	NV	NV	17	20	NV	25	20	20	NV	ND	NV	21.1%

Task 19 Performs basic craning operations.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	
%	15	10	NV	NV	25	20	NV	20	25	30	NV	ND	NV	21%

Task 20 Operates friction drive lattice boom cranes.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	
%	25	30	NV	NV	25	20	NV	20	15	15	NV	ND	NV	22%

Task 21 Operates hydraulic drive lattice boom cranes.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	
%	25	25	NV	NV	15	20	NV	20	15	15	NV	ND	NV	19%

Task 22 Operates hydraulic boom cranes.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	
%	25	17	NV	NV	15	20	NV	20	15	15	NV	ND	NV	18%

Task 23 Performs specialty craning operations.

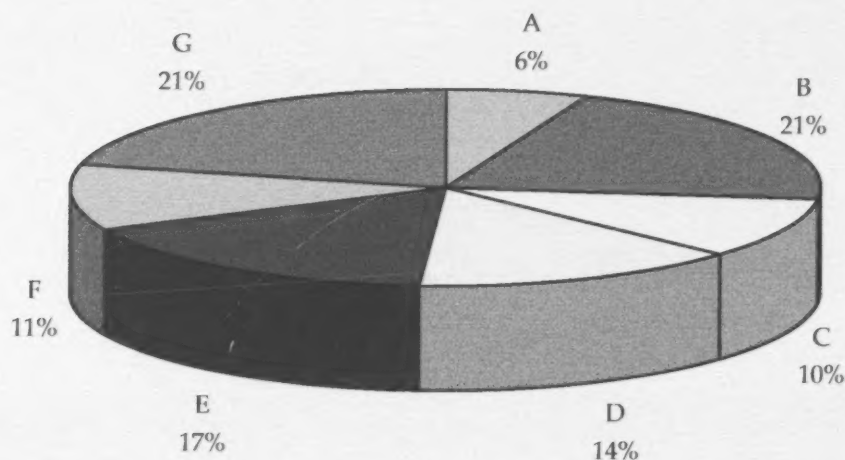
	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	
%	5	5	NV	NV	15	10	NV	10	25	15	NV	ND	NV	12%

Task 24 Secures crane.

	<u>NL</u>	<u>NS</u>	<u>PE</u>	<u>NB</u>	<u>QC</u>	<u>ON</u>	<u>MB</u>	<u>SK</u>	<u>AB</u>	<u>BC</u>	<u>NT</u>	<u>YT</u>	<u>NU</u>	
%	5	13	NV	NV	5	10	NV	10	5	10	NV	ND	NV	8%

APPENDIX E

PIE CHART*



TITLES OF BLOCKS

BLOCK A	Occupational Skills	BLOCK E	Lift Planning, Site Preparation and Crane Setup
BLOCK B	Hoisting Calculations	BLOCK F	Crane Assembly, Disassembly and Transport
BLOCK C	Crane Inspection and Maintenance	BLOCK G	Crane Operation
BLOCK D	Rigging		

* Average percentage of the total number of questions on an interprovincial examination, assigned to assess each block of the analysis, as derived from the collective input from workers within the occupation from all areas of Canada. Interprovincial examinations typically have from 100 to 150 multiple-choice questions.

APPENDIX F

TASK PROFILE CHART – MOBILE CRANE OPERATOR

BLOCKS	TASKS	SUB-TASKS				
A – OCCUPATIONAL SKILLS	1. Uses tools and equipment.	1.01 Uses hand tools.	1.02 Uses power tools.	1.03 Uses torches.	1.04 Uses measuring equipment.	1.05 Uses personal protective equipment (PPE) and safety equipment.
	2. Organizes work.	2.01 Communicates with others.	2.02 Uses documentation.	2.03 Identifies hazards.		
B - HOISTING CALCULATIONS	3. Determines load weights.	3.01 Identifies the weight.	3.02 Calculates weight.			
	4. Calculates crane capacity.	4.01 Determines radius and crane configuration.	4.02 Interprets load charts.			
	5. Performs rigging calculations.	5.01 Performs sling angle calculations.	5.02 Performs working load limit (WLL) calculations.			
C - CRANE INSPECTION AND MAINTENANCE	6. Performs pre-operational checks and regular inspections.	6.01 Inspects engine systems.	6.02 Inspects air systems.	6.03 Inspects electrical systems.	6.04 Inspects hydraulic systems.	6.05 Inspects chassis/car body and running gear components.
		6.06 Inspects outriggers and counterweights.	6.07 Inspects boom components and attachments.	6.08 Inspects hoisting systems.	6.09 Inspects operating controls.	6.10 Inspects monitoring and warning systems.

BLOCKS	TASKS	SUB-TASKS			
D - RIGGING	7. Performs continual checks.	7.01 Monitors site conditions.	7.02 Monitors running lines, hoist lines and standing ropes.	7.03 Monitors gauges and warning systems.	
	8. Performs minor crane maintenance.	8.01 Changes oil and filter.	8.02 Greases crane	8.03 Lubricates wire ropes.	8.04 Makes minor adjustments and replacements.
	9. Inspects and maintains slings and hardware.	9.01 Lubricates slings and hardware.	9.02 Identifies deformities in slings and hardware.	9.03 Disposes of damaged slings and hardware.	
	10. Follows rigging procedures.	10.01 Selects required rigging.	10.02 Rigs loads.	10.03 Monitors rigging.	
E - LIFT PLANNING, SITE PREPARATION AND CRANE SETUP	11. Performs pre-lift planning.	11.01 Participates in routine, engineered and specialty lift planning.	11.02 Assesses risks and hazards.		
	12. Sets up crane.	12.01 Performs final site inspection.	12.02 Positions crane.	12.03 Completes setup.	
F - CRANE ASSEMBLY, DISASSEMBLY AND TRANSPORT	13. Loads and unloads components for transport.	13.01 Loads crane and components.	13.02 Unloads crane and components.		
	14. Drives cranes on public roadways and jobsites.	14.01 Performs pre-trip planning.	14.02 Prepares crane for transport.	14.03 Drives cranes on public roadways.	14.04 Drives cranes on jobsites.

BLOCKS

TASKS

SUB-TASKS

15. Assembles and disassembles crawler and truck-mounted lattice cranes.

15.01 Installs tracks on car body.

15.02 Installs house.

15.03 Installs outrigger boxes on truck-mounted lattice cranes.

15.04 Installs boom base.

15.05 Assembles boom and jib.

15.06 Installs counterweights on crawler and truck-mounted lattice cranes.

15.07 Installs hoist lines, hook blocks and overhaul ball on crawler and truck-mounted lattice cranes.

15.08 Removes hoist lines, hook blocks and overhaul ball from crawler and truck-mounted lattice cranes.

15.09 Disassembles boom and jib.

15.10 Removes counterweights from crawler and truck-mounted lattice cranes.

15.11 Removes boom base.

15.12 Removes house.

15.13 Removes tracks from car body.

15.14 Removes outrigger boxes from truck-mounted lattice cranes.

16. Assembles and disassembles truck-mounted and all-terrain (AT) hydraulic cranes.

16.01 Installs outrigger boxes on truck-mounted and AT hydraulic cranes.

16.02 Installs hoist lines, hook blocks and overhaul ball on truck-mounted and AT hydraulic cranes.

16.03 Installs counterweights on truck-mounted and AT hydraulic cranes.

16.04 Installs swing-away jib and jib on truck-mounted and AT hydraulic cranes.

16.05 Removes swing-away jib and jib from truck-mounted and AT hydraulic cranes.

16.06 Removes counterweights for truck-mounted and AT hydraulic cranes.

16.07 Removes hoist lines, hook blocks and overhaul ball from truck-mounted and AT hydraulic cranes.

16.08 Removes outrigger boxes from truck-mounted and AT hydraulic cranes.

17. Assembles and disassembles rough-terrain (RT) cranes.

17.01 Installs counterweights on RT cranes.

17.02 Installs swing-away jib and jib on RT cranes.

17.03 Removes counterweights from RT cranes.

17.04 Removes swing-away jib and jib from RT cranes.

18. Assembles and disassembles specialty equipment and attachments.

18.01 Assembles specialty equipment and attachments.

18.02 Disassembles specialty equipment and attachments.

G - CRANE OPERATION

19. Performs basic craning operations.

19.01 Uses computer and computerized components for crane operations.

19.02 Raises/lowers load.

19.03 Swings crane.

19.04 Raises/lowers boom.

19.05 Operates telescopic boom.

BLOCKS	TASKS	SUB-TASKS				
	20. Operates friction drive lattice boom cranes.	20.01 Operates friction drive crawler-mounted lattice boom cranes.	20.02 Operates friction drive truck-mounted lattice boom cranes.			
	21. Operates hydraulic drive lattice boom cranes.	21.01 Operates hydraulic drive crawler-mounted lattice boom cranes.	21.02 Operates hydraulic drive truck-mounted lattice boom cranes.			
	22. Operates hydraulic boom cranes.	22.01 Operates RT cranes.	22.02 Operates AT cranes.	22.03 Operates truck-mounted hydraulic cranes.	22.04 Operates boom truck.	
	23. Performs specialty craning operations.	23.01 Operates piledriver.	23.02 Operates clamshell.	23.03 Operates dragline.	23.04 Operates cranes on barges.	23.05 Performs wrecking ball operations.
		23.06 Operates magnet.	23.07 Operates heavy lift attachments.	23.08 Operates tower attachment and luffing jib.	23.09 Performs multi-crane lifts.	23.10 Uses personnel hoisting equipment.
		23.11 Operates drilling attachment.	23.12 Operates knuckle boom trucks.			
	24. Secures crane.	24.01 Secures crane for short term.	24.02 Secures crane for long term.			